NAME: DATE:

Unit-2 Mastery Assessment (version 618)

Question 1 (10 points)

Let f represent a function. If $f[50] = 6$, then there exists a knowable solution to the equation below.

$$y = 13 \cdot f[16x + 18] - 31$$

Find the solution.

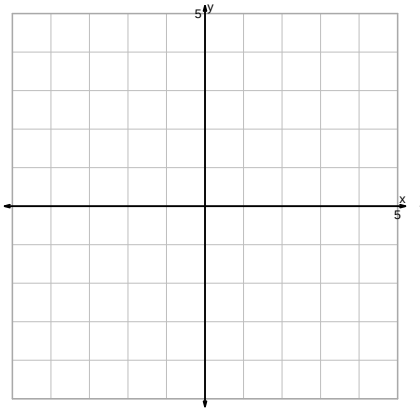
$x =$

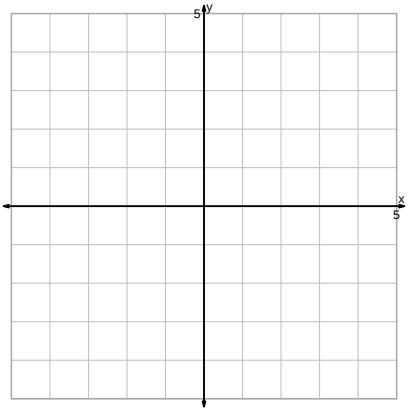
$y =$

Question 2 (20 points)

Graph the equations accurately. For each integer-integer point on the parent, indicate the corresponding point precisely. Also, with dashed lines, indicate any asymptotes.

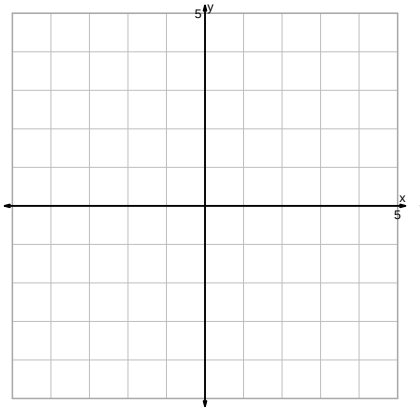
$y = x^3 - 2$

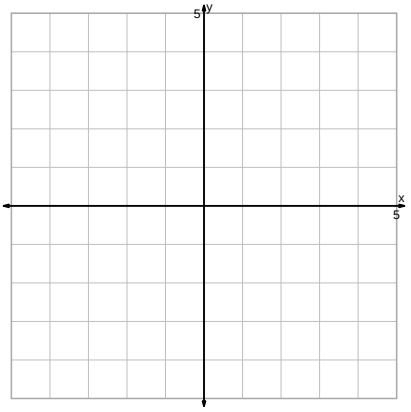




$y = \frac{x^2}{2}$

$y = 2 \cdot \sqrt[3]{x}$

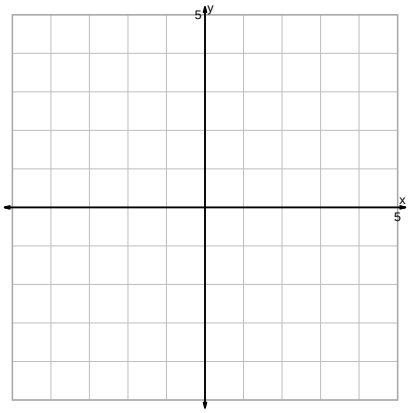


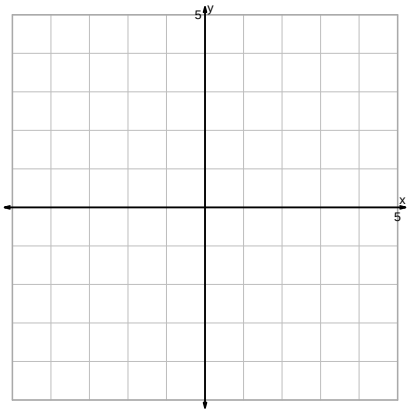


$y = -\log_2(x)$

Question 2 continued...

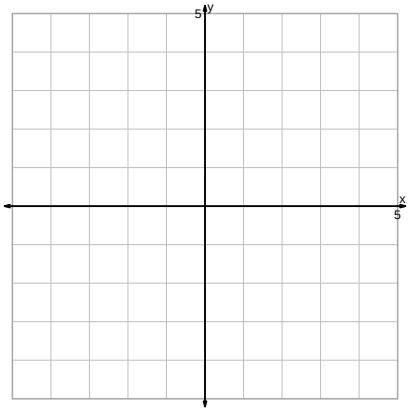
$y = 2^{\frac{x}{2}}$

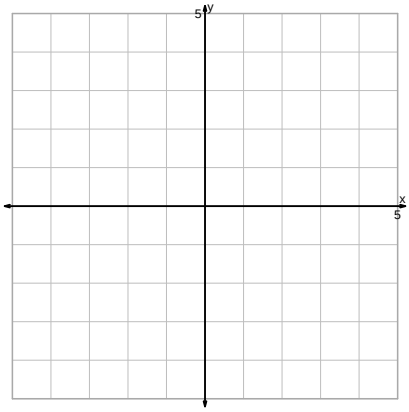




$y = (x-2)^2$

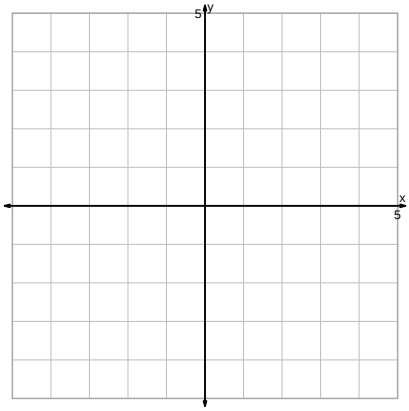
$y = \log_2(x) + 2$

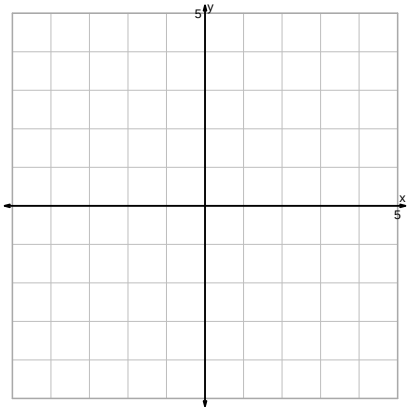




$y = 2^{-x}$

$y = \sqrt{2x}$

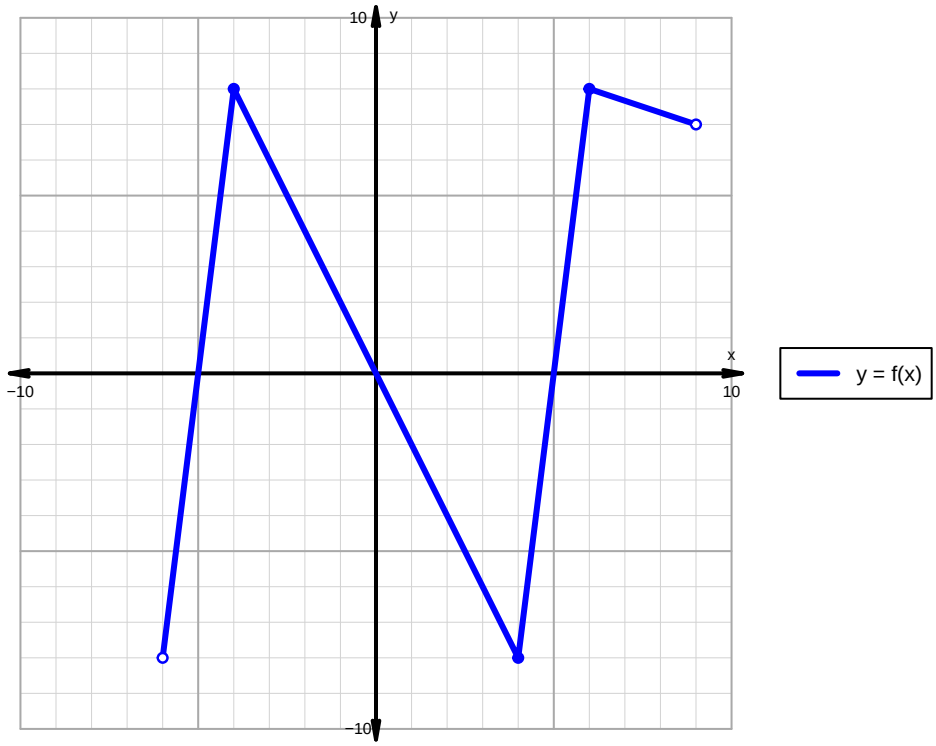




$y = (x+2)^3$

Question 3 (20 points)

A function is graphed below.



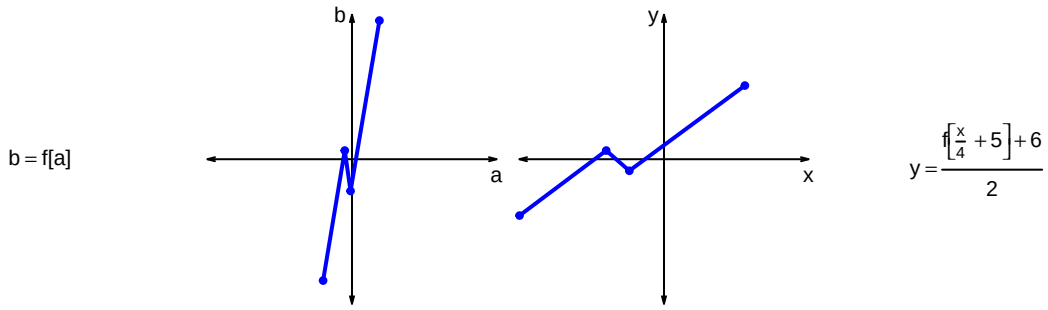
Indicate the following intervals using interval notation.

Feature	Where
Positive	
Negative	
Increasing	
Decreasing	
Domain	
Range	

Question 4 (20 points)

Let f represent a function. The curves $b = f[a]$ and $y = \frac{f\left[\frac{x}{4}+5\right]+6}{2}$ are represented below in a table and on graphs.

a	b	x	y
-20	-84	-100	-39
-5	6	-40	6
-1	-22	-24	-8
19	96	56	51



a. Write formulas for calculating x from a and calculating y from b. (Or, write the coordinate transformation formula.)

b. What geometric transformations (using words like translation, stretch, and shrink), and in what order, would transform the first curve $y = f[x]$ into the second curve $y = \frac{f\left[\frac{x}{4}+5\right]+6}{2}$?

Question 5 (10 points)

A parent square-root function is transformed in the following ways:

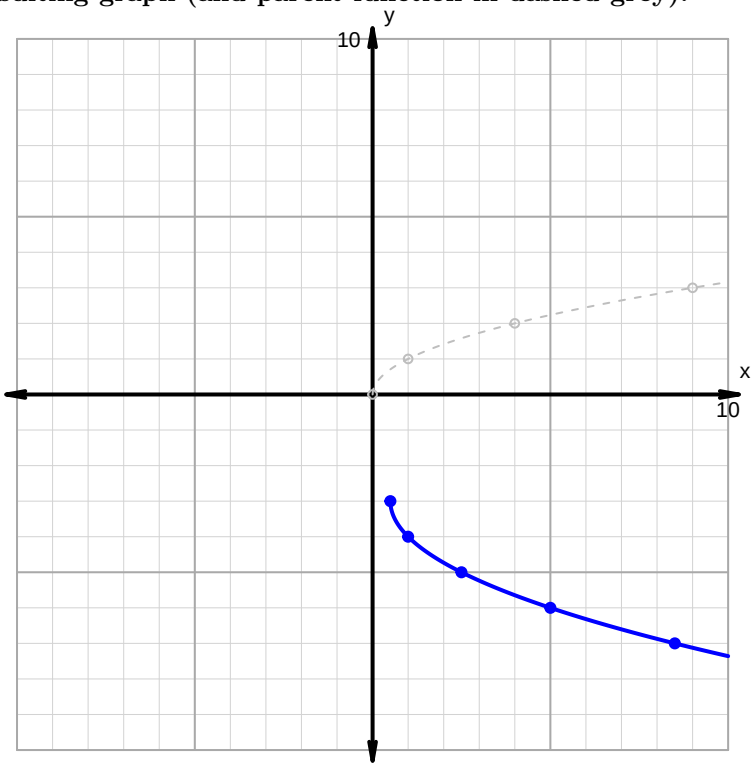
Horizontal transformations

1. Translate right by distance 1.
2. Horizontal shrink by factor 2.

Vertical transformations

1. Translate up by distance 3.
2. Vertical reflection over x axis.

Resulting graph (and parent function in dashed grey):

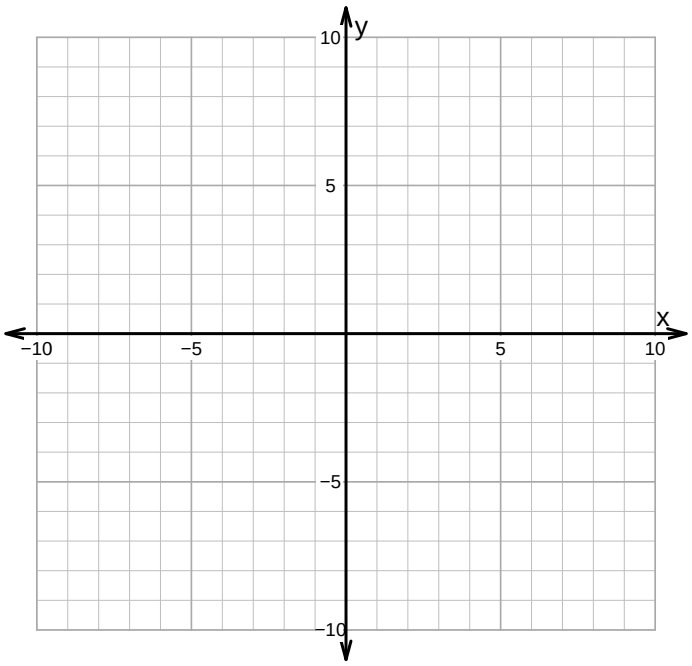


- What is the equation for the curve shown above?

Question 6 (20 points)

Make an accurate graph, and describe locations of features.

$$y = \frac{1}{3} \cdot |x - 3| - 2$$



Feature	Where
Domain	
Range	
Positive	
Negative	
Increasing	
Decreasing	